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Infrastructure, buildings, environment, communications

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ATTN: Information Technology Unit

California Regional Water Quality Control Board
Los Angeles Region (RWQCB)
320 West 4th Street, Suite 200
Los Angeles, California 90013

ENVIRONMENTAL

Subject:

First Quarter 2005 Discharge Monitoring Report
Waste Discharge Requirements Order Number R4-2002-0030 (Series 007)
Compliance File Number CI-95-036, SLIC 0410
Project Site: Former Boeing C-6 Facility (Building 2 Area), Los Angeles, California

Date:
April 22, 2005

Dear Information Technology Unit:

Contact:
Barry Molnaa

On behalf of Boeing Realty Corporation (BRC), ARCADIS is submitting this quarterly monitoring report per the Waste Discharge Requirements (WDR) Order Number R4-2002-0030 (Series 007). The purpose of this report, and future WDR reports, is to provide the Los Angeles Regional Water Quality Control Board (RWQCB) with a summary of bioremediation amendment injections and groundwater monitoring activities performed at the above-referenced project site. The site is located at 19503 Normandie Avenue, Los Angeles, California. Figures 1 and 2 illustrate the site location and the site layout, respectively.

Phone:
3023

This monitoring report summarizes groundwater amendment and monitoring activities performed during the first quarter of 2005. Activities performed to test the amendment system are summarized in Section 1.0. Groundwater monitoring activities performed to evaluate the initial distribution of amendment solution are summarized in Section 2.0. A certification statement is provided in Section 3.0.

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1.0 Amendment Activities

Project Number:
CA000594.0006.00007

Amendment activities (carbohydrate injection or water injection testing activities) were not conducted during the first quarter of 2005.

2.0 Monitoring Activities

During the first quarter of 2005, Weeks 12, 16, and 21 of post-injection groundwater monitoring were conducted per the WDR monitoring schedule (sample Week 2, Week 6, Week 12, Week 16, Week 21, and Week 36 after the first injection).

April 22, 2005

Supplemental groundwater monitoring was also performed after Weeks 12 and 16 of post-injection monitoring. The supplemental groundwater monitoring events were associated with the Alternate Donor Amendment Test conducted on December 15 and 16, 2004.

Week 12 post-injection groundwater monitoring was conducted between January 3 and 5, 2005. During Week 12 of post-injection monitoring, two amendment points (IRZB0081 and IRZB0095) and 14 monitoring wells (IRZMW001A/B, IRZMW002A/B, IRZMW003A/B, IRZMW004, IRZMW005, IRZCMW001, IRZCMW002, IRZCMW003, CMW001, CMW002, and CMW026) were gauged and sampled. The monitoring well locations are identified on Figure 2. The groundwater samples from Week 12 post-injection monitoring were analyzed for volatile organic compounds (VOCs), total organic carbon (TOC), bromide, dissolved manganese, nitrate, sulfate, and permanent gases (dissolved oxygen [DO], carbon dioxide, nitrogen, methane, ethane, and ethene). Field parameters of purged groundwater were also collected (ferrous iron, hydrogen sulfide, pH, DO, oxidation reduction potential [ORP], specific conductance, and temperature).

Week 16 post-injection groundwater monitoring was conducted on January 27 and 28, 2005. During Week 16 of post-injection monitoring, two amendment points (IRZB0081 and IRZB0095) and nine monitoring wells (IRZMW001A/B, IRZMW002A/B, IRZMW003A/B, IRZMW005, IRZCMW003, and CMW026) were gauged and sampled. The monitoring well locations are identified on Figure 2. The groundwater samples from Week 16 post-injection monitoring were analyzed for the same parameters as in the Week 12 post-injection monitoring event discussed above.

Week 21 post-injection groundwater monitoring was conducted between March 18 and 20, 2005. During Week 21 of post-injection monitoring, two amendment points (IRZB0081 and IRZB0095) and 14 monitoring wells (IRZMW001A/B, IRZMW002A/B, IRZMW003A/B, IRZMW004, IRZMW005, IRZCMW001, IRZCMW002, IRZCMW003, CMW001, CMW002, and CMW026) were gauged and sampled. The monitoring well locations are identified on Figure 2. The groundwater samples from Week 21 post-injection monitoring were analyzed for total iron, total manganese, and nitrite and for the same parameters as the Week 12 and Week 16 post-injection monitoring events discussed above.

Following Weeks 12 and 16 of post-injection groundwater monitoring, supplemental groundwater monitoring was performed to evaluate the progress of the Alternate Donor Injection Test. The supplemental groundwater monitoring was performed on January 14, and February 11, 2005 at wells IRZB0081, IRZB0095, IRZMW004, and

April 22, 2005

IRZMW005. The monitoring well locations are identified on Figure 2. Groundwater samples from these four wells were analyzed for TOC and VOCs. Field parameters of purged groundwater were also collected (pH, DO, ORP, specific conductance, and temperature).

Field parameter data, laboratory analytical methods, and analytical results from the groundwater monitoring events are summarized in Tables 1 through 4. Laboratory analytical data with associated chain-of-custody documentation are provided in Appendix A. Sample collection logs with field parameters and monitoring well sampling data are maintained in the project files and are not provided with this report.

Prior to collecting the groundwater samples, depth to groundwater was measured in each monitoring well by using a water level meter accurate to 0.01 feet. Figure 3 shows the groundwater elevation contours for Zones B and C in March 2005.

Groundwater samples were collected using low flow sampling techniques, so that the purge rate was generally less than 600 milliliters per minute (mL/min) and drawdown while purging was less than 1 foot. Since recharge of monitoring well IRZMW0002A does not support the use of low flow sampling techniques, the monitoring well was purged dry prior to sampling.

The sampling methodology also involved use of a flow-through cell that contains field instrumentation used to measure groundwater stabilization parameters (i.e., temperature, pH, specific conductance, ORP, and DO). For each monitoring well, the flow-through cell was connected to a submersible pump with dedicated polyethylene tubing. Once the field parameters stabilized, groundwater samples were collected in laboratory-prepared containers. Field parameters and other relevant sampling data were documented on sample collection logs. The groundwater samples were transported in a chilled ice chest with proper chain-of-custody documentation to an analytical laboratory certified by the State of California (Severn Trent Laboratories, Inc.).

3.0 Certification Statement

I declare under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system or those directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate and complete. I am aware that

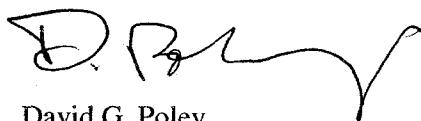
April 22, 2005

there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or comments regarding this discharge monitoring report, please contact Barry Molnaa or David Poley at (714) 278-0992.

Sincerely,

ARCADIS G&M, Inc.



David G. Poley
Project Scientist


Trent Henderson, P.E., DEE
Site Evaluation & Remediation
Department Manager
Barry Molnaa
Project Manager

Copies:

Stephanie Sibbett-Brutocao, Boeing Realty Corporation
Project File

Enclosures:

Figure 1 - Site Location

Figure 2 - Amendment Point and Monitoring Well Locations

Figure 3 - Groundwater Contour Map for Zones B and C - March 2005

Table 1 - Groundwater Parameter and Total Organic Carbon Results

Table 2 - Inorganic Analytical Results

Table 3 - Volatile Organic Compound Analytical Results

Table 4 - Permanent Gas Analytical Results

Appendix A - Laboratory Reports and Chain-of Custody Documents

FIGURES



Figures

ART: QUINONES

PIN: NGUYEN

CHK: LOTHMAN

FILE:

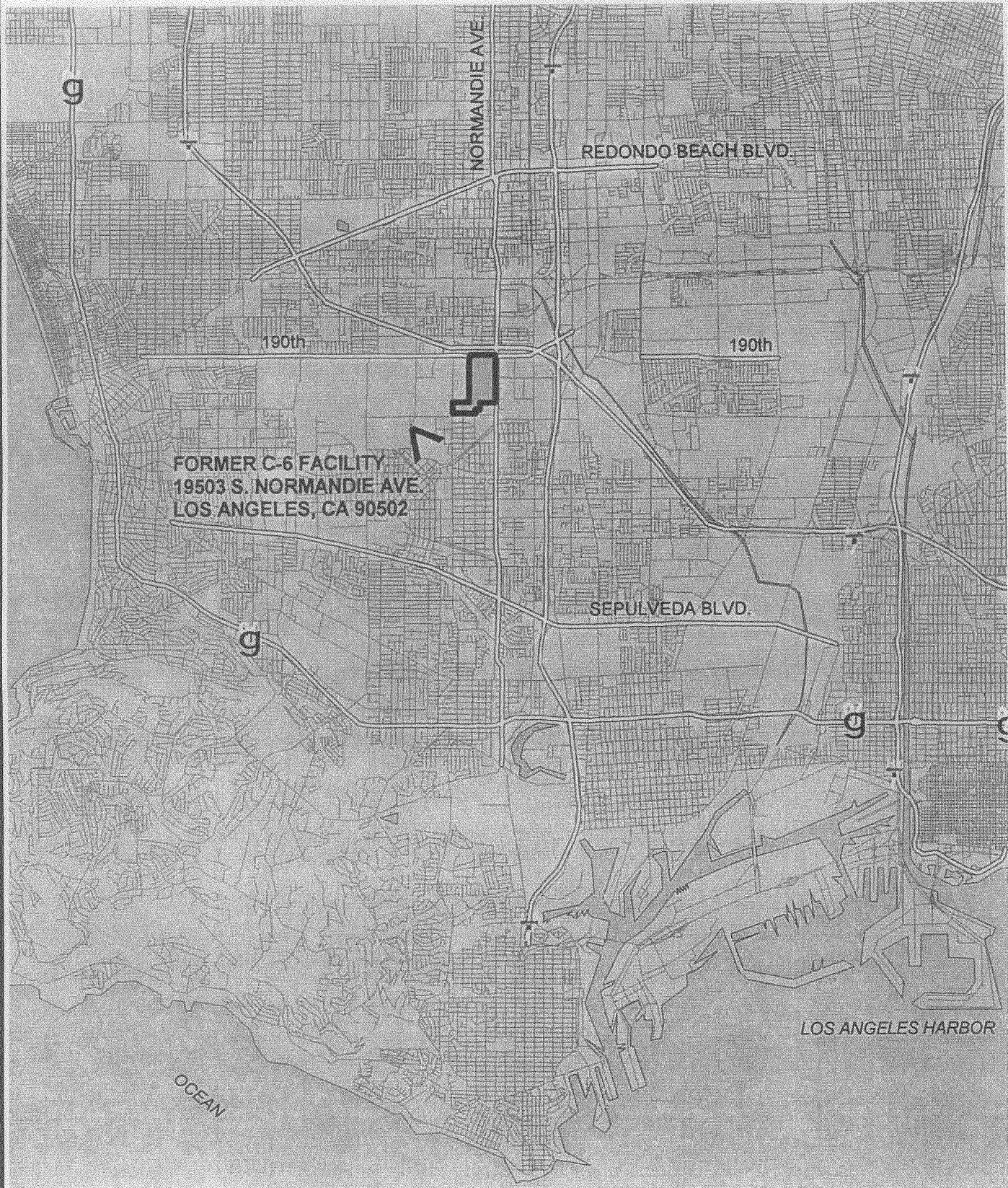
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Base map download from "Tiger File" data website hosted by ESRI.



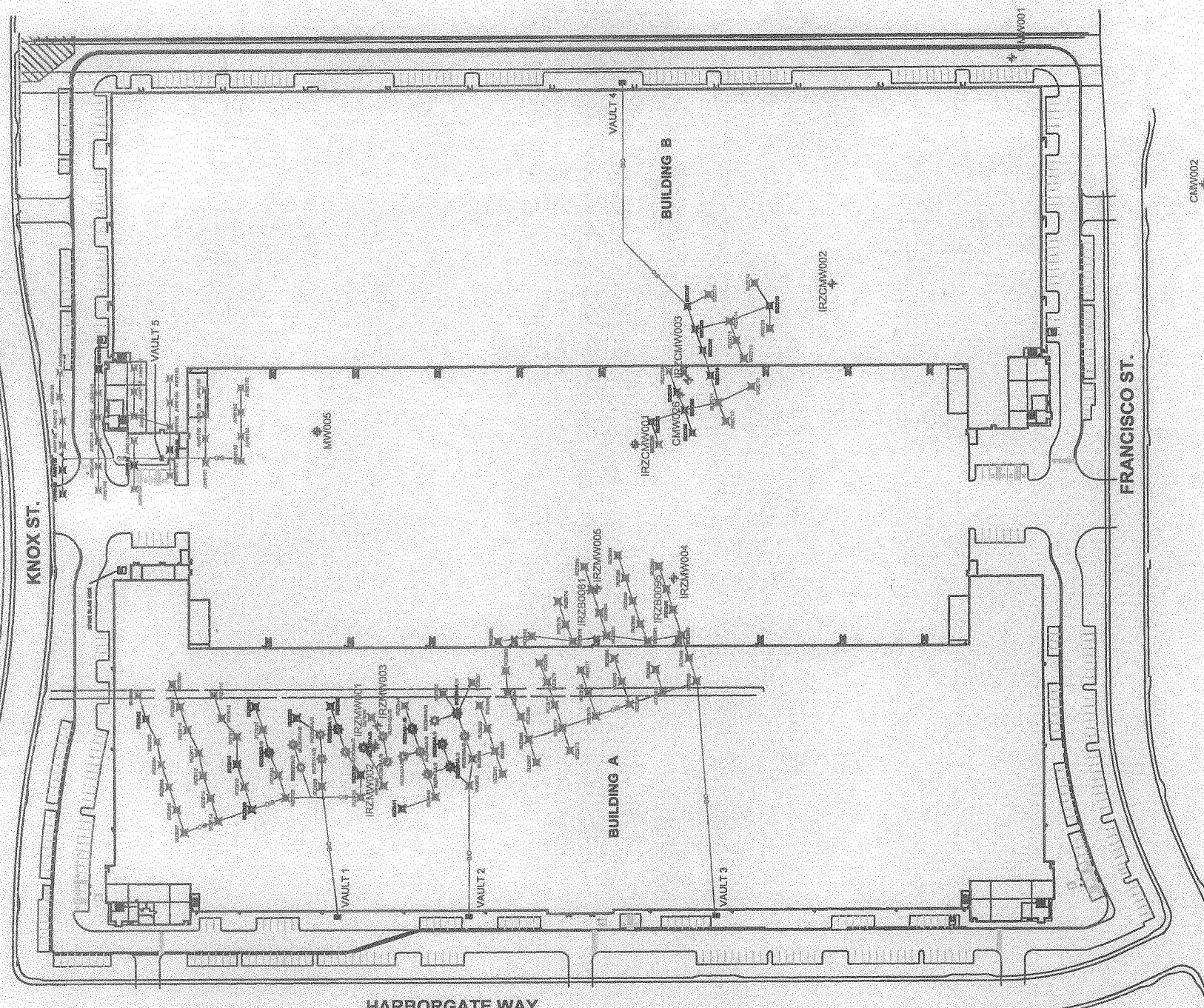
SITE LOCATION

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

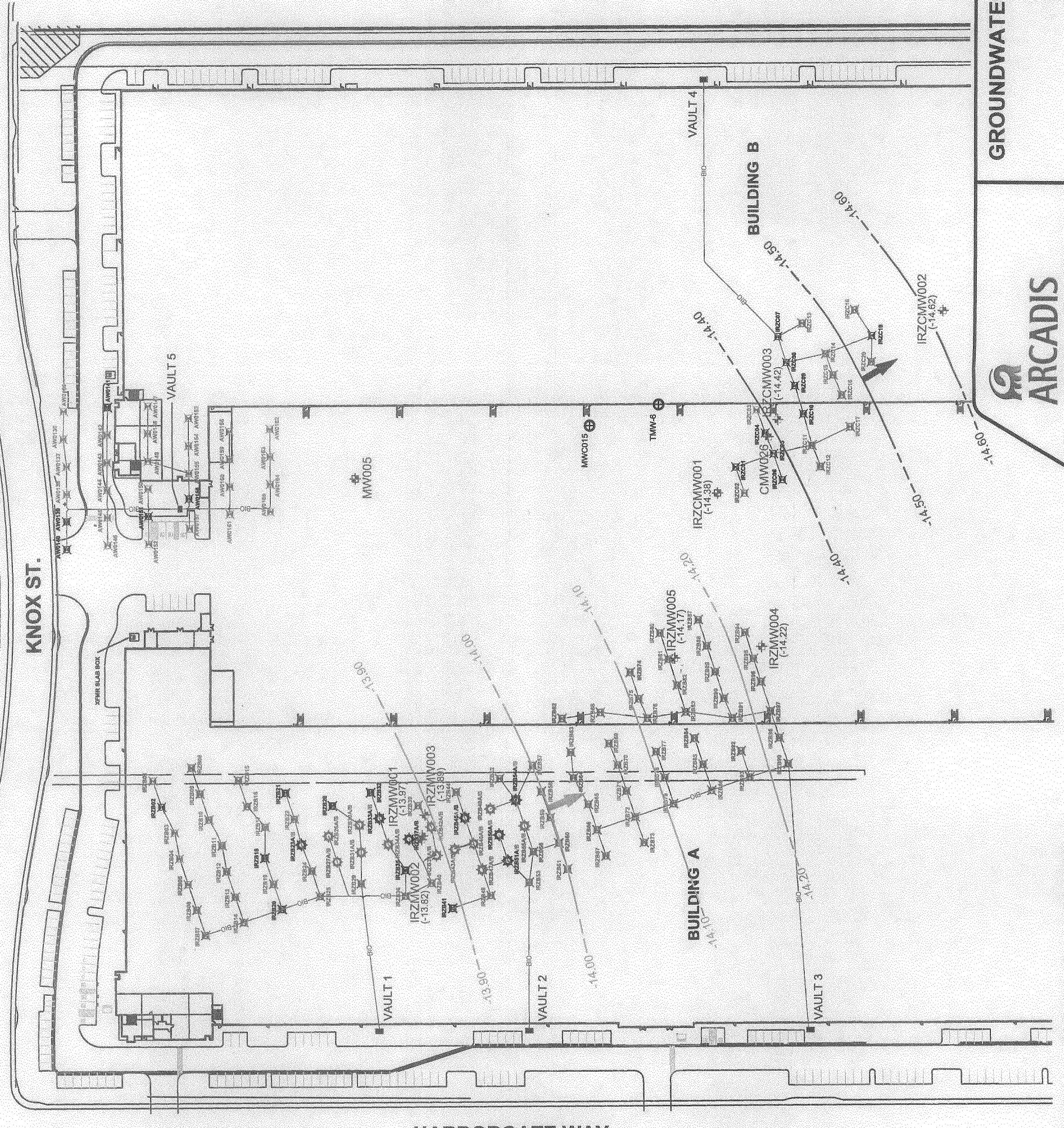
FIGURE

1

**AMENDMENT POINT AND
MONITORING WELL LOCATIONS**
BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA



BASE MAP PROVIDED BY HILL PINKERT ARCHITECTS, INC. IN FEBRUARY 2003



TABLES



Tables

Table 1. Groundwater Parameter and Total Organic Carbon Results
Former Building 2 Area, Former Boeing C-6 Facility

Well Number	Screened Zone	Well Group	Sampling Event	Sample Date	Top of Casing (feet msl)	Depth to Water (feet)	Groundwater Elevation (feet msl)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Temperature (°C)	Specific Conductance (umhos/cm)	Hydrogen Sulfide (mg/L)	Ferrous Iron (mg/L)	Total Organic Carbon (mg/L)
IRZB0081	Zone B	A	Baseline	10/9/2003	50.28	64.53	-14.25	6.7	5.1	144.4	21.6	1,563	Too Turbid	Too Turbid	5.8
			Week 2	10/22/2004		64.51	-14.23	7.3	3.7	-42.8	22.6	922	0	<1.0	2.8
			Alt. Amend. Monitoring	12/14/2004		64.48	-14.20	5.2	1.8	-53.0	21.9	8,147	NM	NM	4,560
			Week 12	1/5/2005		64.61	-14.33	4.9	1.3	-21.9	21.7	7,384	Too Turbid	Too Turbid	6,140
			Alt. Amend. Monitoring	1/14/2005		64.39	-14.11	4.9	27.9	6.5	22.4	4,755	NM	NM	4,750
			Week 16	1/28/2005		64.25	-13.97	5.1	0.8	-43.1	21.7	4,803	<2.5	2.2	3,750
			Alt. Amend. Monitoring	2/11/2005		63.94	-13.66	5.7	1.1	-92.9	21.7	4,088	NM	NM	2,140
			Week 21	3/20/2005		64.29	-14.01	5.5	2.1	-68.2	22.1	5,309	0.7	Too Turbid	3,260
		A	Baseline	10/7/2003	50.08	64.59	-14.51	7.0	5.6	83.7	23.1	1,435	0	1.3	3.0
			Week 2	10/22/2004		64.50	-14.42	7.4	5.1	-47.1	22.2	661	0	<1.0	2.4
			Week 6	11/19/2004		64.37	-14.29	7.4	6.7	67.2	22.1	1,142	Too Turbid	Too Turbid	4.4
			Alt. Amend. Monitoring	12/14/2004		64.49	-14.41	7.4	4.9	-5.4	22.2	1,296	NM	NM	3.3
			Week 12	1/5/2005		65.28	-15.20	6.8	2.6	-90.5	21.1	5,873	Too Turbid	Too Turbid	1,890
			Alt. Amend. Monitoring	1/14/2005		NM	--	6.7	20.6	-107.7	21.9	4,858	NM	NM	2,400
			Week 16	1/28/2005		64.41	-14.33	6.7	2.1	-98.1	20.7	4,592	<2.0	1	2,060
		A	Alt. Amend. Monitoring	2/11/2005	54.18	64.04	-13.96	6.8	2.4	-103.8	21.0	4,244	NM	NM	1,580
			Week 21	3/20/2005		64.29	-14.21	6.9	3.5	-116.4	21.6	2,555	0	Too Turbid	811
			Baseline	10/30/2003		68.05	-13.87	6.7	4.8	245.9	21.9	2,354	0	0	5.0
			Injection Evaluation	5/21/2004		68.61	-14.43	7.1	2.7	47.4	25.3	2,595	NM	NM	5.5
			Injection Evaluation	10/12/2004		67.69	-13.51	6.0	1.2	-31.6	21.0	2,538	NM	NM	3.5
			Week 2	10/22/2004		68.00	-13.82	6.9	0.3	-10.1	25.6	2,339	0	<1.0	4.3
			Week 6	11/18/2004		68.08	-13.90	6.9	1.5	33.1	27.1	2,048	0	<1.0	5.3
		A	Week 12	1/4/2005	54.10	67.84	-13.66	6.9	0.4	21.9	24.2	2,345	0	<1.0	6.1
			Week 16	1/27/2005		67.85	-13.67	6.9	0.3	64.8	22.8	1,893	0	0	4.4
			Week 21	3/19/2005		67.65	-13.47	6.9	0.3	-77.9	26.1	1,994	0	1.0	3.6
			Baseline	10/30/2003		67.98	-13.88	6.8	6.2	159.6	21.8	1,254	0	1	3.8
			Injection Evaluation	5/21/2004		68.11	-14.01	7.3	6.8	78.3	23.7	1,278	NM	NM	3.6
			Injection Evaluation	10/12/2004		67.70	-13.60	7.3	2.2	5.6	21.4	1,042	NM	NM	5.8
			Week 2	10/22/2004		68.07	-13.97	7.3	4.0	53.7	22.7	1,168	0	0.1	2.0
		A	Week 6	11/18/2004	54.10	68.00	-13.90	7.2	6.6	125.0	24.2	953	0.1	0.3	5.2
			Week 12	1/4/2005		67.72	-13.62	7.3	6.1	40.6	21.3	1,111	0	0.4	6.3
			Week 16	1/27/2005		67.77	-13.67	7.2	4.7	94.9	22.6	919	0	0	3.0
			Week 21	3/19/2005		67.59	-13.49	7.3	5.4	11.1	24.4	982	0.1	0.5	4.4
			Baseline	10/30/2003		67.98	-13.91	6.8	3.1	-140.7	22.1	1,852	5	2	21.8
			Injection Evaluation	5/21/2004		68.39	-14.32	7.2	0.9	-52.5	22.1	2,038	NM	NM	13.3
			Injection Evaluation	10/12/2004		67.85	-13.78	6.1	1.1	-54.1	21.5	2,760	NM	NM	11.1
		A	Week 2	10/21/2004	54.07	68.05	-13.98	6.4	0.2	-107.4	23.5	2,860	0	<1.0	10.1
			Week 6	11/18/2004		68.21	-14.14	6.5	2.2	-102.7	25.8	2,220	0	Too Turbid	9.7
			Week 12	1/4/2005		67.74	-13.67	6.8	0.9	-26.6	21.3	2,389	0	Too Turbid	7.2
			Week 16	1/27/2005		68.02	-13.95	6.8	0.7	19.3	22.2	1,882	0	0.5	6.0
			Week 21	3/19/2005		67.22	-13.15	6.9	0.8	-24.1	22.0	1,865	0	2	11.2
		A	Baseline	10/30/2003	54.17	68.07	-13.90	6.8	4.1	110.3	21.7	1,125	0	Too Turbid	4.1
			Injection Evaluation	5/21/2004		68.97	-14.80	7.2	4.2	45.5	24.0	1,204	NM	NM	5.2
			Injection Evaluation	10/12/2004		67.61	-13.44	7.1	1.3	8.6	21.5	1,254	NM	NM	6.2
			Week 2	10/21/2004		67.99	-13.82	7.3	2.4	-34.3	25.5	1,325	0	<1.0	2.8
			Week 6	11/18/2004		68.18	-14.01	7.1	4.6	48.3	24.1	1,067	0	<1.0	4.6
			Week 12	1/4/2005		67.74	-13.57	7.2	4.0	32.7	21.5	1,234	0	<1.0	3.1
			Week 16	1/27/2005		67.91	-13.74	7.1	3.4	63.4	22.3	1,047	0	0	3.3

Table 1. Groundwater Parameter and Total Organic Carbon Results
Former Building 2 Area, Former Boeing C-6 Facility

Well Number	Screened Zone	Well Group	Sampling Event	Sample Date	Top of Casing (feet msl)	Depth to Water (feet)	Groundwater Elevation (feet msl)	pH	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Temperature (°C)	Specific Conductance (umhos/cm)	Hydrogen Sulfide (mg/L)	Ferrous Iron (mg/L)	Total Organic Carbon (mg/L)
IRZMW003A	Zone B	B	Baseline	10/31/2003	54.14	68.21	-14.07	6.8	4.0	210.3	25.7	1,761	Too Turbid	Too Turbid	2.6
			Injection Evaluation	10/12/2004		67.79	-13.65	6.1	1.1	-8.9	21.6	3,107	NM	NM	5.7
			Week 12	1/4/2005		67.82	-13.68	6.6	0.5	-19.2	24.7	2,196	0	<1.0	9.7
			Week 16	1/27/2005		67.85	-13.71	6.6	0.3	123.2	24.7	1,747	0	0	5.5
			Week 21	3/19/2005		67.63	-13.49	6.8	0.5	-45.4	24.7	1,512	Too Turbid	0.3	8.4
		B	Baseline	10/31/2003	54.20	68.24	-14.04	6.8	5.0	280.4	23.3	1,154	Too Turbid	Too Turbid	3.8
			Injection Evaluation	10/12/2004		67.82	-13.62	7.2	3.9	-10.6	22.7	1,276	NM	NM	3.4
			Week 12	1/4/2005		67.84	-13.64	7.2	4.2	54.2	22.0	1,223	0	0.7	3.4
			Week 16	1/27/2005		67.89	-13.69	7.2	4.6	111.2	22.7	974	0	0	3.8
			Week 21	3/19/2005		67.67	-13.47	7.3	3.7	16.9	23.2	961	0	0.6	3.5
IRZMW004	Zone B	C	Baseline	10/7/2003	50.48	64.84	-14.36	7.0	4.8	152.9	22.5	1,449	0	0	3.1
			Injection Evaluation	10/12/2004		64.45	-13.97	7.2	2.5	-40.9	24.1	1,337	NM	NM	2.3
			Alt. Amend. Monitoring	12/14/2004		64.63	-14.15	7.2	4.2	-28.6	23.7	1,473	NM	NM	3.6
			Week 12	1/5/2005		64.77	-14.29	7.2	3.5	16.6	23.6	1,453	0.1	1.0	3.8
			Alt. Amend. Monitoring	1/14/2005		64.56	-14.08	7.1	46.0	109.7	23.2	1,213	NM	NM	4.0
			Alt. Amend. Monitoring	2/11/2005		64.16	-13.68	7.3	2.6	178.0	21.7	1,102	NM	NM	7.4
			Week 21	3/20/2005		64.45	-13.97	7.1	1.2	-130.7	23.0	1,149	0.3	3.0	31.7
	Zone C	A	Baseline	10/7/2003	48.94	63.38	-14.44	7.2	4.5	34.0	22.3	965	0	0	2.0
			Week 2	10/22/2004		63.33	-14.39	7.2	1.1	-86.7	22.7	123	0	1.0	1.6
			Week 6	11/19/2004		63.28	-14.34	7.1	0.7	-202.7	24.0	384	0.2	0.7	11
			Week 12	1/5/2005		63.44	-14.50	7.0	1.6	-13.8	22.3	72	0	1.0	2.7
			Week 16	1/28/2005		63.31	-14.37	6.7	0.1	-108.7	22.6	459	0.8	3.2	22
			Week 21	3/19/2005		62.92	-13.98	7.3	3.6	12.8	22.2	64	0	1.4	11.0
CMW0026		B	Baseline	10/7/2003	49.12	63.58	-14.46	7.2	2.7	133.5	22.8	951	0	0	2.0
			Injection Evaluation	10/12/2004		62.98	-13.86	7.3	1.1	-7.5	22.3	969	NM	NM	2.4
			Week 12	1/5/2005		63.62	-14.50	7.3	0.5	-45.8	21.5	907	0	0.2	2.7
			Week 16	1/28/2005		63.41	-14.29	7.3	0.3	105.3	22.6	729	0	0	2.3
			Week 21	3/19/2005		63.03	-13.91	7.4	0.2	-73.8	22.0	730	NM	0.4	2.8
IRZCMW003		C	Baseline	10/8/2003	52.98	67.78	-14.80	7.0	2.4	188.5	21.4	888	0	0	3.2
			Injection Evaluation	10/12/2004		67.25	-14.27	7.4	1.1	-51.0	21.4	974	NM	NM	2.2
			Week 12	1/5/2005		68.02	-15.04	7.4	0.9	146.5	21.3	912	0	0.2	2.2
			Week 21	3/19/2005		67.25	-14.27	7.7	0.2	-169.5	22.5	709	0.4	0.3	11.7
CMW001		C	Baseline	10/9/2003	51.81	66.81	-15.00	6.8	2.6	-120.0	23.3	948	0.5	0	23
			Week 12	1/5/2005		66.83	-15.02	7.3	0.5	-95.3	23.0	1,017	0	0.3	28
			Week 21	3/18/2005		66.63	-14.82	7.3	0.2	-62.2	23.5	806	0	0	26
CMW002		C	Baseline	10/8/2003	Not Surveyed	65.29	--	6.9	2.2	51.4	23.0	788	0	0	8.0
			Week 12	1/3/2005		64.80	--	5.2	0.5	-6.6	22.5	875	0	0.2	14
			Week 21	3/18/2005		64.51	--	7.3	0.2	-56.7	22.6	699	0	0	13
IRZCMW001		D	Baseline	10/8/2003	49.14	63.65	-14.51	7.1	4.2	183.0	21.7	1,219	0	0	3.3
			Injection Evaluation	10/12/2004		NM	NM	7.2	2.5	-12.0	22.3	1,313	NM	NM	2.5
			Week 6	11/18/2004		63.52	-14.38	7.2	1.5	46.9	24.2	1,117	0	0.1	2.3
			Week 12	1/4/2005		63.41	-14.27	7.2	0.5	9.0	21.3	1,248	0	0.2	2.1
			Week 21	3/19/2005		62.97	-13.83	7.3	0.1	-50.6	23.4	1,028	0	0.5	3.7
EPA Analytical Method						N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9060

Notes:

Wells micropurged then sampled, except grab bailer samples collected 10/12/04.

Group A: wells located within the estimated injection area

Group B: wells located at the estimated edge of the injection area

Group C: wells located downgradient of the treatment area

Group D: wells located upgradient of the treatment area

feet msl - feet above mean sea level

mg/L - milligrams per liter

mV - millivolts

°C - degrees Celsius

N/A - Not applicable

NM - Not measured

Table 2. Inorganic Analytical Results
Former Building 2 Area, Boeing C-6 Facility

Well Number	Screened Zone	Well Group	Sampling Event	Sample Date	Bromide (mg/L)	Chloride (mg/L)	Total Iron (mg/L)	Dissolved Manganese (mg/L)	Total Manganese (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	
IRZB0081	Zone B	A	Baseline	10/9/2003	0.94	348	25	0.05	1.4	8.5	<1	43.8	
			Week 12	1/5/2005	746	NS	NS	5.1	NS	<2	NS	104	
			Week 16	1/28/2005	<2.5	NS	NS	7.0	NS	<2	NS	38.1	
			Week 21	3/20/2005	<25	283	410	9.5	9.6	<1	<0.5	13.7	
		A	Baseline	10/7/2003	0.85	320	3.30	0.052	0.78	7.2	<1	38.6	
			Week 6	11/19/2004	0.64	NS	NS	0.016	NS	6.5 J	NS	49.7	
			Week 12	1/5/2005	18	NS	NS	5.7	NS	<1	NS	45.5	
			Week 16	1/28/2005	<5	NS	NS	7.1	NS	<0.5	NS	20.6	
			Week 21	3/20/2005	<5	90	70	2.3	3.4	0.30	<1	22.0	
IRZMW001A		A	Baseline	10/30/2003	3.6	615	6.8	0.019	0.24 J	14	<1	88.6	
			Week 6	11/18/2004	1.9	NS	NS	0.064	NS	8.8 J	NS	60.2	
			Week 12	1/4/2005	1.9	NS	NS	0.019	NS	9.4	NS	62.9	
			Week 16	1/27/2005	1.9	NS	NS	0.048	NS	9.2	NS	62.3	
			Week 21	3/19/2005	2.1	490	0.35	0.15	0.17	3.1	0.3 JQC	59.3	
IRZMW001B		A	Baseline	10/30/2003	0.73	218	2.9	0.020	0.09 J	5.8	<0.5	98.0	
			Week 6	11/18/2004	0.41 J	NS	NS	0.0041 J	NS	6.8 J	NS	87.9	
			Week 12	1/4/2005	0.43 J	NS	NS	0.0014 J	NS	7.2	NS	93.9	
			Week 16	1/27/2005	0.47 J	NS	NS	0.037	NS	7.3	NS	93.2	
			Week 21	3/19/2005	0.45 J	158	0.078 J	0.0023 J	0.02	5.5	<0.5	80.8	
IRZMW002A		A	Baseline	10/31/2003	2.3	444	13	3.6	3.7 J	0.13	<1	77.8	
			Week 6	11/18/2004	1.7	NS	NS	2.1	NS	4.3 J	NS	64.6	
			Week 12	1/4/2005	1.8	NS	NS	1.7	NS	3.7	NS	68.1	
			Week 16	1/27/2005	1.7	NS	NS	1.5	NS	5.0	NS	64.9	
			Week 21	3/19/2005	1.8	509	3.6	1.5	1.9	3.0	<0.5	66.2	
IRZMW002B		A	Baseline	10/30/2003	0.94	220	12	0.150	0.31 J	6.9	0.21 QC	80.9	
			Week 6	11/18/2004	0.66	NS	NS	0.035	NS	8.6 J	NS	98.1	
			Week 12	1/4/2005	0.64	NS	NS	0.018	NS	9.5	NS	94.8	
			Week 16	1/27/2005	0.78	NS	NS	0.022	NS	8.1	NS	67.6	
			Week 21	3/19/2005	0.73	229	1.3	0.044	0.07	2.7	<0.5	47.8	
IRZMW005		A	Baseline	10/9/2003	0.97	358	2.5	0.02	0.10	8.6	<1	41.6	
			Week 6	11/19/2004	0.98	NS	NS	0.05	NS	4.7 J	NS	36.0	
			Week 12	1/5/2005	0.89	NS	NS	2.6	NS	<0.1	NS	23.4	
			Week 16	1/28/2005	<25	NS	NS	3.5	NS	<0.5	NS	15.7	
			Week 21	3/20/2005	<5	438	41.6	5.2	5.4	0.083 J	<1	5.3	
IRZMW003A		B	Baseline	10/31/2003	1.1	465	5.6	0.0069 J	0.11 J	9.6	<1	48.3	
			Week 12	1/4/2005	1.4	NS	NS	0.10	NS	6.1	NS	41.3	
			Week 16	1/27/2005	1.3	NS	NS	0.12	NS	6.2	NS	41.7	
			Week 21	3/19/2005	0.3 J	147	4.6	0.21	0.33	1.5	<0.5	14.0	
IRZMW003B		B	Baseline	10/31/2003	0.69	240	8.1	0.051	0.23 J	6.3	<0.5	77.9	
			Week 12	1/4/2005	0.59	NS	NS	0.021	NS	6.0	NS	80.8	
			Week 16	1/27/2005	0.58	NS	NS	0.019	NS	5.9	NS	79.8	
			Week 21	3/19/2005	0.56	185	0.75	0.0089 J	0.02	5.9	<0.5	65.9	
IRZMW004		C	Baseline	10/7/2003	0.89	338	4.8	0.013 J	0.30	8.1	<1	41.2	
			Week 12	1/5/2005	0.80	NS	NS	0.0028 J	NS	7.3	NS	42.1	
			Week 21	3/20/2005	0.68	244	2.5	0.50	0.51 B	5.0	<0.5	42.7	
CMW026	Zone C	A	Baseline	10/7/2003	0.55	215	1.7	0.0054 J	0.09	2.8	<1	34.2	
			Week 6	11/19/2004	0.18 J	NS	NS	0.380	NS	0.066 J	NS	4.0	
			Week 12	1/5/2005	<0.5	NS	NS	0.035	NS	0.20	NS	5.0	
			Week 16	1/28/2005	0.14 J	NS	NS	0.57	NS	<0.1	NS	2.3	
			Week 21	3/19/2005	<0.5	3.8	1.8	0.06	0.06	0.44	0.08 J	5.5	
IRZCMW003		B	Baseline	10/7/2003	0.51	191	1.1	0.015	0.16	1.6	<1	49.8	
			Week 12	1/5/2005	0.38 J	NS	NS	0.016	NS	2.1	NS	52.6	
			Week 16	1/28/2005	0.38 J	NS	NS	0.024	NS	2.1	NS	52.3	
			Week 21	3/19/2005	0.36 J	138	0.77	0.014 J	0.10	1.6	<0.5	50.7	
IRZCMW002		C	Baseline	10/8/2003	0.37 J	150	0.23	0.10	0.04	2.5	<0.5	62.5	
			Week 12	1/5/2005	0.37 J	NS	NS	0.0012 J	NS	3.2	NS	61.6	
			Week 21	3/19/2005	0.38 J	144	0.20	0.67	0.75	<0.1	<0.5	56.9	
CMW001		C	Baseline	10/9/2003	0.32 J	127	2.8	0.12	0.16	<0.1	<1	115	
			Week 12	1/5/2005	0.23 J	NS	NS	0.34	NS	<0.1	NS	156	
			Week 21	3/18/2005	0.24 J	112	0.15	0.36	0.39	<0.1	<0.5	143	
CM													

Table 3. Volatile Organic Compound Analytical Results
Former Building 2 Area, Boeing C-6 Facility

Well Number	Screened Zone	Well Group	Sampling Event	Sample Date	PCE (ug/L)	TCE (ug/L)	cis-1,2-DCE (ug/L)	trans-1,2-DCE (ug/L)	Vinyl Chloride (ug/L)	1,1,2-TCA (ug/L)	1,1-DCE (ug/L)	1,1-DCA (ug/L)	1,2-DCA (ug/L)	Acetone (ug/L)	Chlorobenzene (ug/L)	Chloroform (ug/L)	Methyl Ethyl Ketone (ug/L)	Methylene Chloride (ug/L)
IRZB0081	Zone A	A	Baseline	10/9/2003	<170	6,500	<170	<170	<170	63 J	<170	<170	<1,700	<170	50 J	<830	<170	
			Alt. Amend. Monitoring	12/14/2004	<120	5,300	89 J	<120	<120	60 J	<120	<120	<1,200	<120	<120	<620	<120	
			Week 12	1/5/2005	<50	1,900	100	<50	<50	17 J	<50	<50	240 J	<50	<50	750	<50	
			Alt. Amend. Monitoring	1/14/2005 ^(a)	<50	3,000	150	<50	<50	32 J	<50	<50	240 J	<50	<50	790	<50	
			Week 16	1/28/2005	<100	4,600	260	<100	<100	34 J	<100	<100	320 J	<100	<100	400 J	<100	
			Alt. Amend. Monitoring	2/11/2005	<50	4,200	690	<50	<50	39 J	<50	<50	390 J	<50	19 J	260	17 J	
			Week 21	3/20/2005	<50	2,300	2,600	<50	<50	31 J	<50	<50	690	<50	<50	1,600	<50	
IRZB0095	Zone A	A	Baseline	10/7/2003	<120	5,800	<120	<120	<120	49 J	<120	<120	<1,200	<120	150	<620	150	
			Week 6	11/19/2004	<100	3,900	<100	<100	<100	64 J	<100	<100	<1,000	<100	85 J	<500	<100	
			Alt. Amend. Monitoring	12/14/2004	<83	4,300	<83	<83	<83	68 J	<83	<83	<830	<83	96	<420	<83	
			Week 12	1/5/2005	9 J	1,000	9.0 J	<25	<25	11 J	<25	<25	<250	<25	16 J	110 J	9.4 J	
			Alt. Amend. Monitoring	1/14/2005	6.7 J	620	340	<10	<10	12	<10	<10	63 J	<10	6.6 J	170	2 J	
			Week 16	1/28/2005	5.7 J	450	930	<12	<12	15	<12	<12	38 J	<12	12	130	<12	
			Alt. Amend. Monitoring	2/11/2005	<25	440	1,100	<25	<25	20 J	<25	<25	95 J	<25	13 J	160	<25	
			Week 21	3/20/2005	<25	430	1,700	<25	<25	25	<25	<25	<250	<25	13 J	77 J	<25	
IRZMW001A	Zone A	A	Baseline	10/30/2003	<500	11,000	<500	<500	<500	<500	<500	<5,000	<500	<500	<2,500	<500		
			Week 6	11/18/2004	<120	7,200	43 J	<120	<120	<120	77 J	<120	<120	<1,200	<120	<120	<620	<120
			Week 12	1/4/2005	<120	6,900	<120	<120	<120	66 J	<120	<120	<1,200	<120	<120	<620	<120	
			Week 16	1/27/2005	<120	7,700	38 J	<120	<120	58 J	<120	<120	<1,200	<120	<120	<620	<120	
			Week 21	3/19/2005	<250	9,800	2 J	<250	<250	<250	81 J	<250	<250	<2,500	<250	<1,200	<250	
IRZMW001B	Zone A	A	Baseline	10/30/2003	<120	4,800	54 J	<120	<120	50 J	<120	<120	<1,200	<120	<120	<620	<120	
			Week 6	11/18/2004	<25	1,400	<25	<25	<25	19 J	<25	<25	<250	<25	<25	<120	<25	
			Week 12	1/4/2005	<25	1,300	<25	<25	<25	16 J	<25	<25	<250	<25	<25	<120	<25	
			Week 16	1/27/2005	<25	1,600	<25	<25	<25	17 J	<25	<25	<250	<25	<25	<120	<25	
			Week 21	3/19/2005	<50	2,100	<50	<50	<50	25 J	<50	<50	<500	<50	<50	<250	<50	
IRZMW002A	Zone B	A	Baseline	10/30/2003	<120	5,100	660	<120	<120	<120	63 J	<120	<120	<1,200	<120	<120	<620	<120
			Week 6	11/18/2004	<200	8,300	220	<200	<200	<200	79 J	<200	<200	<2,000	<200	<200	<1,000	<200
			Week 12	1/4/2005	<100	7,100	460	<100	<100	<100	62 J	<100	<100	<1,000	<100	<100	<500	<100
			Week 16	1/27/2005	<250	8,700	490	<250	<250	<250	<250	<250	<2,500	<250	<250	<1,200	<250	
			Week 21	3/19/2005 ^(b)	<250	9,600	1,300	<250	<250	<250	81 J	<250	<250	<2,500	<250	<1,200	<250	
IRZMW002B	Zone A	A	Baseline	10/30/2003	<12	640	80	<12	<12	<12	8.5 J	<12	<12	73 JB	<12	<12	<62	<12
			Week 6	11/18/2004	<5	230	13	<5	<5	<5	3.0 J	<5	<5	<50	<5	<5	<25	<5
			Week 12	1/4/2005	<2.5	170	6	<2.5	<2.5	<2.5	1.7 J	<2.5	<2.5	8.8 J	<2.5	<2.5	<12	<2.5
			Week 16	1/27/2005	<5	240	7	<5	<5	<5	<5	<5	<50	<5	<5	<25	<5	
			Week 21	3/19/2005	<5	300	18	<5	<5	<5	3.5 J	<5	<5	<50	2.2 J	<5	<25	<5
IRZMW005	Zone A	A	Baseline	10/9/2003	<170	6,000	<170	<170	<170	75 J	<170	<170	<1,700	<170	56 J	<830	<170	
			Week 6															

Table 3. Volatile Organic Compound Analytical Results
Former Building 2 Area, Boeing C-6 Facility

Well Number	Screened Zone	Well Group	Sampling Event	Sample Date	PCE (ug/L)	TCE (ug/L)	cis-1,2-DCE (ug/L)	trans-1,2-DCE (ug/L)	Vinyl Chloride (ug/L)	1,1,2-TCA (ug/L)	1,1-DCE (ug/L)	1,1-DCA (ug/L)	1,2-DCA (ug/L)	Acetone (ug/L)	Chlorobenzene (ug/L)	Chloroform (ug/L)	Methyl Ethyl Ketone (ug/L)	Methylene Chloride (ug/L)
CMW026	Zone C	A	Baseline	10/7/2003	<25	1,200	<25	<25	<25	65	<25	<25	<250	<25	21 J	<120	<25	
			Week 6	11/19/2004	<5	35	280	2.6 J	<5.0	<5	41	1.5 J	<5	<50	<5	<5	<25	<5
			Week 12	1/5/2005	<1	6.5	17	<1.0	<1.0	<1.0	3.8	<1.0	<1.0	6.6 J	<1.0	<1.0	<5	<1.0
			Week 16	1/28/2005	<2.5	30	160	1.2 J	<2.5	<2.5	16	0.71 J	11.0 J	11 J	<2.5	<2.5	14	<2.5
			Week 21	3/19/2005	<1	3.8	40	0.47 J	<1	<1	11	<1	<1	19	<1	<1	<5	<1
IRZCMW003	Zone C	B	Baseline	10/7/2003	<100	2,900	<100	<100	<100	83 J	<100	<100	<1,000	<100	36 J	<500	89 J	
			Week 12	1/5/2005	<100	4,300	<100	<100	<100	46 J	<100	<100	<1,000	<100	<100	<500	<100	
			Week 16	1/28/2005	<100	5,000	44 J	<100	<100	<100	49 J	<100	<100	<1,000	<100	<100	<500	<100
			Week 21	3/19/2005	<120	5,700	350	<120	<120	<120	69 J	<120	<120	<1,200	<120	<120	<620	<120
IRZCMW002	Zone C	C	Baseline	10/8/2003	<100	4,600	<100	<100	<100	39 J	<100	<100	<1,000	<100	36 J	<500	<100	
			Week 12	1/5/2005	<120	5,200	<120	<120	<120	<120	<120	<120	<1,200	<120	<120	<620	<120	
			Week 21	3/19/2005	<120	7,700	<120	<120	<120	<120	38 J	<120	<120	<1,200	<120	<120	<620	<120
CMW001	Zone C	C	Baseline	10/9/2003	<120	<120	<120	<120	<120	<120	<120	<120	<1,200	7,300	60 J	<620	<120	
			Week 12	1/5/2005	<250	<250	<250	<250	<250	<250	<250	<250	<2,500	12,000	<250	<1,200	<250	
			Week 21	3/18/2005	<400	<400	<400	<400	<400	<400	<400	<400	<4,000	15,000	<400	<2,000	<400	
CMW002	Zone C	C	Baseline	10/8/2003	<100	460	<100	<100	<100	<100	<100	<100	<1,000	3,600	<100	<500	<100	
			Week 12	1/3/2005	<120	330	<120	<120	<120	<120	<120	<120	<1,200	4,900	<120	<620	<120	
			Week 21	3/18/2005 ^(e)	<100	390	<100	<100	<100	<100	<100	<100	<1,000	6,300	<100	<500	<100	
IRZCMW001	Zone D	D	Baseline	10/8/2003	<62	1,300	22 J	<62	<62	<62	350	13 J	<62	210 J	<62	76	<310	<62
			Week 6	11/18/2004	<12	920	15	6.3 J	<12	4.7 J	200	8.6 J	6.4 J	<120	<12	44	<62	<12
			Week 12	1/4/2005	<25	1,000	16 J	<25	<25	<12	250	8.4 J	<25	<250	<25	41	<120	<25
			Week 21	3/19/2005	<25	1,600	24 J	12 J	<25	8.6 J	420	15 J	11 J	<250	<25	55	<120	<25
EPA Analytical Method				8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	

Notes:

Group A: wells located within the estimated injection area

PCE - tetrachloroethene

JB - acetone detected at 11 ug/L in trip blank

Group B: wells located at the estimated edge of the injection area

TCE - trichloroethene

(e) 2-Hexanone was also detected at a concentration of 2,000 ug/L.

Group C: wells located downgradient of the treatment area

DCE - dichloroethene

(f) Methyl tert-butyl ether was also detected at an estimated concentration of 3.9 ug/L.

Group D: wells located upgradient of the treatment area

TCA - trichloroethane

(g) Benzene was also detected at a concentration of 38 ug/L.

ug/L - micrograms per liter

DCA - dichloroethane

J - estimated result less than reporting limit

< - not detected above indicated reporting limit

**Table 4. Permanent Gas Analytical Results
Former Building 2 Area, Boeing C-6 Facility**

Well Number	Screened Zone	Well Group	Sampling Event	Sample Date	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	Nitrogen (mg/L)	Methane (ug/L)	Ethane (ug/L)	Ethene (ug/L)	
IRZB0081	Zone B	A	Baseline	10/9/2003	3.7	16.9	12.6	<0.2	0.06	0.11	
			Week 12	1/5/2005	2.0	750	6.8	184	0.03	0.10	
			Week 16	1/28/2005	<0.25	800	5.3	3.1	0.12	0.20	
			Week 21	3/20/2005	0.34	790	5.7	5,300	0.03	0.17	
		B	Baseline	10/7/2003	2.7	14.0	8.7	<0.2	0.05	0.08	
IRZB0095		A	Week 6	11/19/2004	2.9	10.8	7.8	1.1	0.02	0.02	
			Week 12	1/5/2005	0.30	253	6.0	3.9	0.05	0.25	
			Week 16	1/28/2005	0.47	320	12	0.19	0.86	0.41	
			Week 21	3/20/2005	2.7	160	23	3,100	0.01	0.34	
			Baseline	10/30/2003	1.2	27	10	2.9	0.07	0.05	
IRZMW001A		A	Week 6	11/18/2004	0.48	27	3.7	1.8	0.01	<0.01	
			Week 12	1/4/2005	0.49	42	5.9	488	0.01	0.02	
			Week 16	1/27/2005	2.0	55	16	2.6	0.03	0.09	
			Week 21	3/19/2005	3.3	74	18	5,600	<0.005	<0.005	
			Baseline	10/30/2003	4.1	21	12	0.4	0.04	0.02	
IRZMW001B		A	Week 6	11/18/2004	3.3	15	7.9	<0.2	0.01	<0.01	
			Week 12	1/4/2005	4.9	17	12	0.3	0.02	0.01	
			Week 16	1/27/2005	NS	NS	NS	NS	NS	NS	
			Week 21	3/19/2005	8.8	26	22	74	0.03	0.02	
			Baseline	10/30/2003	0.62	39	8.7	4.0	1.2	3.3	
IRZMW002A		A	Week 6	11/18/2004	0.53	103	2.5	5.2	0.02	0.12	
			Week 12	1/4/2005	1.8	48	5.2	5.0	0.04	0.25	
			Week 16	1/27/2005	5.1	53	17	0.02	0.08	0.07	
			Week 21	3/19/2005	5.6	66	18	230	0.08	1.1	
			Baseline	10/30/2003	3.4	17	16	6.0	1.3	2.1	
IRZMW002B		A	Week 6	11/18/2004	1.6	14	4.7	1.3	0.02	0.02	
			Week 12	1/4/2005	3.2	17	9.4	1.8	0.02	0.01	
			Week 16	1/27/2005	4.5	20	16	0.01	0.04	0.18	
			Week 21	3/19/2005	3.0	91	26	24	0.07	0.12	
			Baseline	10/9/2003	5.0	16	14	<0.2	0.06	0.07	
IRZMW005		A	Week 6	11/19/2004	0.24	208	3.6	234	<0.01	0.02	
			Week 12	1/5/2005	2.8	362	15	3,998	0.03	0.32	
			Week 16	1/28/2005	0.81	270	13	3.6	0.07	0.25	
			Week 21	3/20/2005	2.3	380	14	10,000	<0.005	0.79	
			Baseline	10/31/2003	3.1	25	16	0.5	0.17	0.10	
IRZMW003A		B	Week 12	1/4/2005	3.6	156	16	913	0.01	0.08	
			Week 16	1/27/2005	2.5	160	15	3.1	<0.005	0.09	
			Week 21	3/19/2005	5.9	150	26	3,600	<0.005	0.04	
			Baseline	10/31/2003	3.7	18	12	0.7	0.09	0.08	
IRZMW003B		B	Week 12	1/4/2005	4.0	18	12	32	0.01	0.01	
			Week 16	1/27/2005	7.0	20	22	0.01	<0.005	0.03	
			Week 21	3/19/2005	6.6	21	24	92	0.02	0.02	
			Baseline	10/7/2003	2.7	15	8.4	0.30	0.05	0.06	
IRZMW004		C	Week 12	1/5/2005	3.1	17	10	2.2	0.02	0.01	
			Week 21	3/20/2005	6.5	38	27	21	0.08	0.22	
			Baseline	10/9/2003	2.5	6.7	15	0.90	0.52	0.04	
CMW026	Zone C	A	Week 6	11/19/2004	0.27	14	8.2	1,994	<0.01	0.21	
			Week 12	1/5/2005	0.89	3.4	5.5	2,038	<0.005	0.11	
			Week 16	1/28/2005	2.4	45	11	17	<0.005	0.42	
			Week 21	3/19/2005	7.6	7.8	25	2,100	0.01	0.35	
			Baseline	10/7/2003	1.1	7.1	12	1.6	0.95	0.88	
IRZCMW003		B	Week 12	1/5/2005	0.93	12	15	4.3	0.02	0.05	
			Week 16	1/28/2005	3.2	11	21	0.01	0.08	0.11	
			Week 21	3/19/2005	5.8	13	33	22	0.04	0.17	
			Baseline	10/8/2003	0.94	7.2	15	0.6	0.43	1.2	
IRZCMW002		C	Week 12	1/5/2005	0.83	6.8	9.9	0.3	0.03	0.02	
			Week 21	3/19/2005	1.9	5.5	26	4.9	0.08	0.51	
			Baseline	10/9/2003	1.7	9.1	13	4.8	1.5	2.3	
CMW001		C	Week 12	1/5/2005	0.94	12	10	13	0.25	0.44	
			Week 21	3/18/2005	3.1	15	22	22	0.42	0.35	
			Baseline	10/8/2003	2.5	11	16	0.90	0.14	1.04	
CMW002		C	Week 12	1/3/2005	1.1	12	11	0.80	0.13	0.12	
			Week 21	3/18/2005	5.9	15	31	14	0.24	0.08	
			Baseline	10/8/2003	3.1	13	15	0.3	0.11	0.18	
IRZCMW001		D	Week 6	11/18/2004	0.98	13	7.1	503	<0.01	0.07	
			Week 12	1/4/2005	0.72	17	11	6,810	<0.005	0.18	
			Week 21	3/19/2005	3.3	19	16	11,000	<0.005	0.31	
			Analytical Method		RSK 175	RSK 175	RSK 175	RSK 175	RSK 175	RSK 175	

Notes

APPENDIX A



ARCADIS

Appendix A

Laboratory Reports and Chain of Custody Documents